

UNIVERSITY OF MIAMI
ROSENSTIEL
SCHOOL of MARINE &
ATMOSPHERIC SCIENCE



Tritium Laboratory

21 July 2016

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SWAB REPORT # 823

SWAB DATE: 14 July 2016

R/V Endeavor

Dr. James D. Happell
Associate Research Professor

Distribution:
SWAB Committee
William Fanning

COMMENTS TO SWAB REPORTS

12 May 2014

Typical LSC instrument background values for ^3H and ^{14}C are 2 and 5 cpm, respectively. The LSC is a Tricarb 2910 TR with the low level counting option.

All samples are counted for 60 minutes, the instrument background is subtracted, and activities are reported in dpm/m^2 . Bucket blank activities are not subtracted. Counting errors (2 standard deviations) are also reported in dpm/m^2 . An error larger than the activity indicates that the activity is not significantly different from zero.

Criteria for SWAB Results

Category	^3H (dpm/m^2)	^{14}C (dpm m^2)	Recommendations
A	<500	<50	No action
B*	500-10,000	50-10,000	Needs cleaning before any natural tracer work. Decks in radiation vans with activities above $1000 \text{ dpm}/\text{m}^2$ should be cleaned.
C**	10,000-100,000	10,000-50,000	Must be cleaned before any use.
D***	>100,000	>50,000	May be a health hazard. Notify local radiation safety official.

Note: ^{14}C and ^{35}S have peak energies of 156 and 167 KeV, respectively; thus ^{35}S will be registered as ^{14}C by our counting techniques. Categories A, B and C are not a health hazard.

Recommended Cleaning Procedure

Wearing ordinary household rubber gloves:

^3H : Wash and scrub with radioactive cleanup detergent such as COUNT-OFF (50 ml COUNT-OFF to 4 liters of water), using sponges to distribute solution and reabsorb it.

^{14}C : Wash with 1% sulfuric or 2% hydrochloric (muriatic) acid with good ventilation (will dissolve carbonates, releasing $^{14}\text{CO}_2$). Follow up with wash as if for ^3H .

Disposal of Cleaning Materials (gloves, sponges, etc)

Categories A & B dispose as ordinary garbage, C & D contact your institution's radiation safety office.

Note: If category C or D is encountered, we try to notify the insitution promptly by phone or email.

REPORT FOR SWAB # 823

LOCATION: Morehead City, NC
VESSEL: R/V Endeavor

DATE: 14 July 2016
TECHNICIAN: Charlene Grall

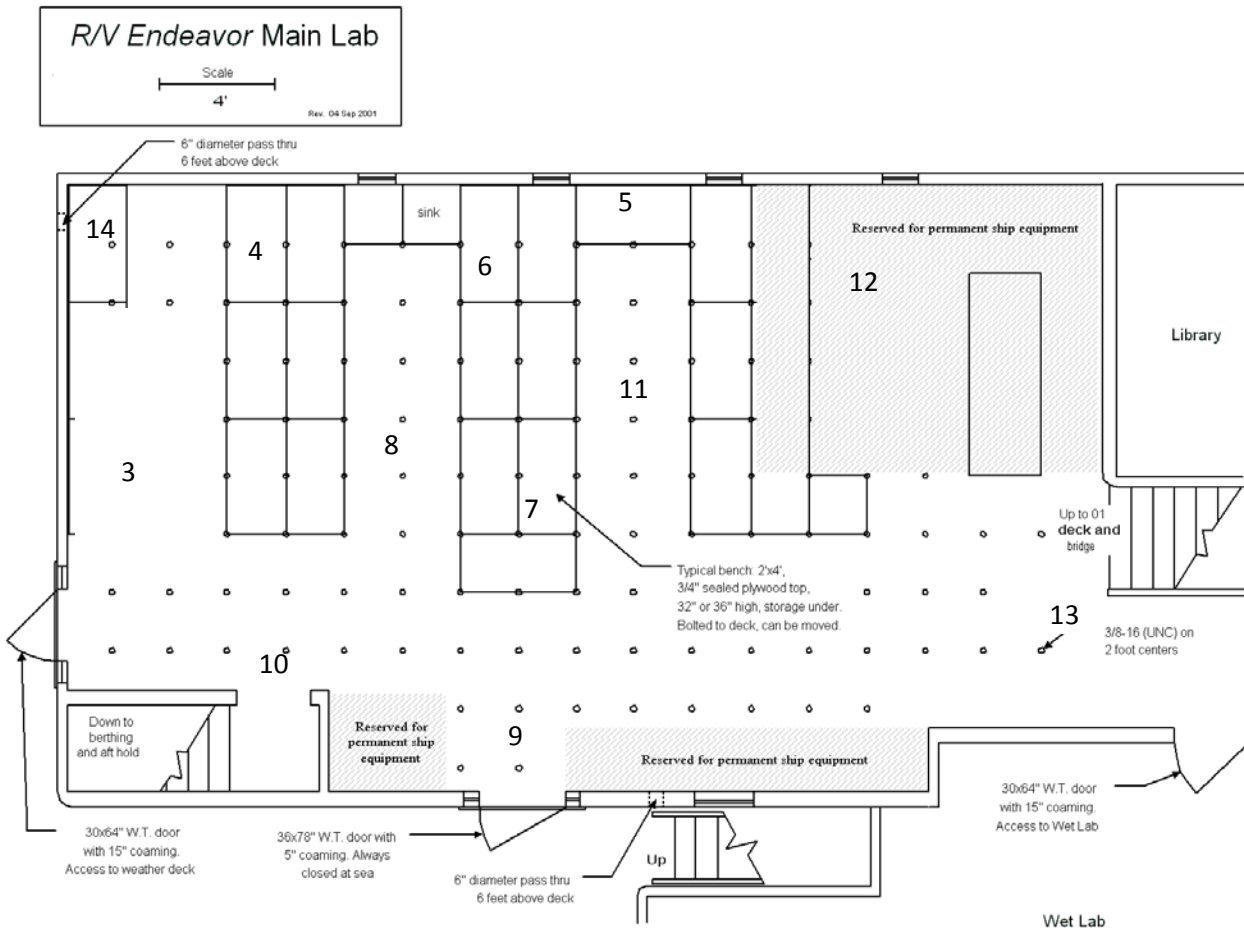
Sample #	Sample Identification	^3H dpm/m ²		^{14}C dpm/m ²	
		activity	error	activity	error
1	1st Vial Bkgnd	0	± 16	0	± 7
2	Initial bucket blank C.O # 1	16	± 35	12	± 34
<u>Main Lab (see Figure 1)</u>					
3	Deck in front of aft Sink area	11	± 36	8	± 34
4	Aft benchtop on portside	0	± 11	12	± 40
5	Port benchtop	0	± 13	1	± 29
6	Benchtop forward of port sink	9	± 35	7	± 34
7	Center benchtop on starboardside	0	± 30	7	± 37
8	Deck between aft and center benches	6	± 41	3	± 33
9	Deck inside starboard door	0	± 22	4	± 37
10	Deck at top of stairs to living quarters	0	± 18	19	± 39
11	Deck between center and forward benches	0	± 21	14	± 41
12	Deck in front of forward port benchtop	0	± 28	10	± 39
13	Deck at forward entrance to lab	36	± 51	0	± 30
14	Inside refrigerator	0	± 30	8	± 38
<u>Wet Lab (Figure2)</u>					
15	Deck inside aft entrance	0	± 26	26	± 38
16	Starboard benchtop	0	± 22	10	± 39
17	Benchtop aft of sink	0	± 19	12	± 39
18	Deck in front of Sink area	0	± 26	22	± 37
19	Deck inside port entrance	6	± 14	28	± 37
<u>Special Purpose Lab (Figure 2)</u>					
20	Inside fume hood	0	± 15	2	± 82
21	Inside Revco fridge	10	± 75	0	± 22
22	Benchtop forward of sink	41	± 52	0	± 20
23	Benchtop in front of black chest freezer	13	± 29	18	± 36
24	Deck in front of sink	7	± 65	0	± 18
25	Benchtop aft of sink	0	± 28	23	± 40
26	Deck in front of fume hood	0	± 29	6	± 44
27	Deck outside lab entrance	9	± 31	11	± 35
28	Intermediate bucket blank	0	± 19	0	± 19

Sample #	Sample Identification	³ H dpm/m ²		¹⁴ C dpm/m ²	
		activity	error	activity	error
<u>Upper Lab and 01 Deck (Figure 3)</u>					
29	Deck at top of stair	15	± 38	8	± 33
30	Deck in front of forward benchtop	6	± 10	0	± 17
31	Center benchtop	0	± 13	0	± 19
32	Deck at aft exit to 01 Deck	2	± 11	12	± 36
33	Companionway outside Electronic Repair Room	0	± 21	0	± 23
<u>UNOLS Radioisotope Van 6255020 (Figure 4)</u>					
34	Rad Van Benchtop adjacent to sink	219	± 58	33	± 28
35	Sink area	48	± 44	15	± 31
36	Inside refrigerator	*1299	± 97	*584	± 50
37	Inside freezer	18	± 32	20	± 35
38	Benchtop across from LSC	197	± 56	35	± 29
39	Fume hood area	21	± 34	20	± 35
40	Benchtop across from sink	26	± 68	0	± 0
41	Benchtop across from refrigerator	0	± 0	16	± 38
42	Top of LSC	48	± 43	19	± 33
43	Deck in front of fume hood	30	± 34	30	± 36
44	Deck in center of van	122	± 47	50	± 34
45	Deck at entrance near sink	73	± 43	37	± 34
46	01 Deck outside van entrance	0	± 0	0	± 0
47	Final bucket blank	0	± 0	0	± 0

Comments

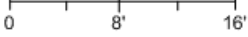
Please note that the error reported for each isotope is the two-standard deviation counting error. The reports may now contain values less than zero. When decay counting background samples will be distributed about the background vial, which means that negative values are possible. In the past we rounded the negative values to zero. Values are only significantly above background when they are positive and larger than the error. All areas tested on the ship and in the rad van were free from any isotope contamination that requires cleaning.

Figure 1
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R/V Endeavor Main Deck and Labs

Scale



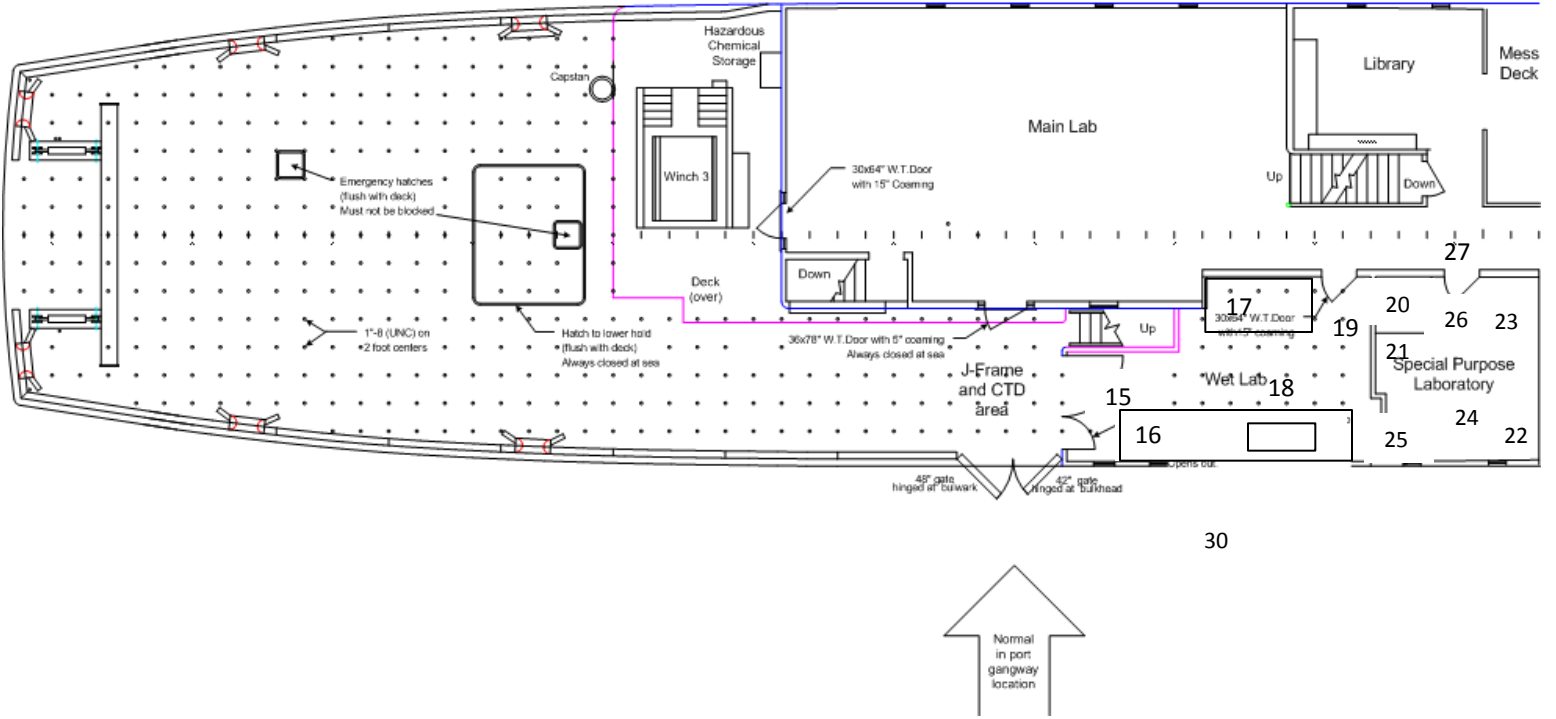
Deck bolt pattern is on 2 foot centers

Rev. 04 Sep 2001

Figure 2

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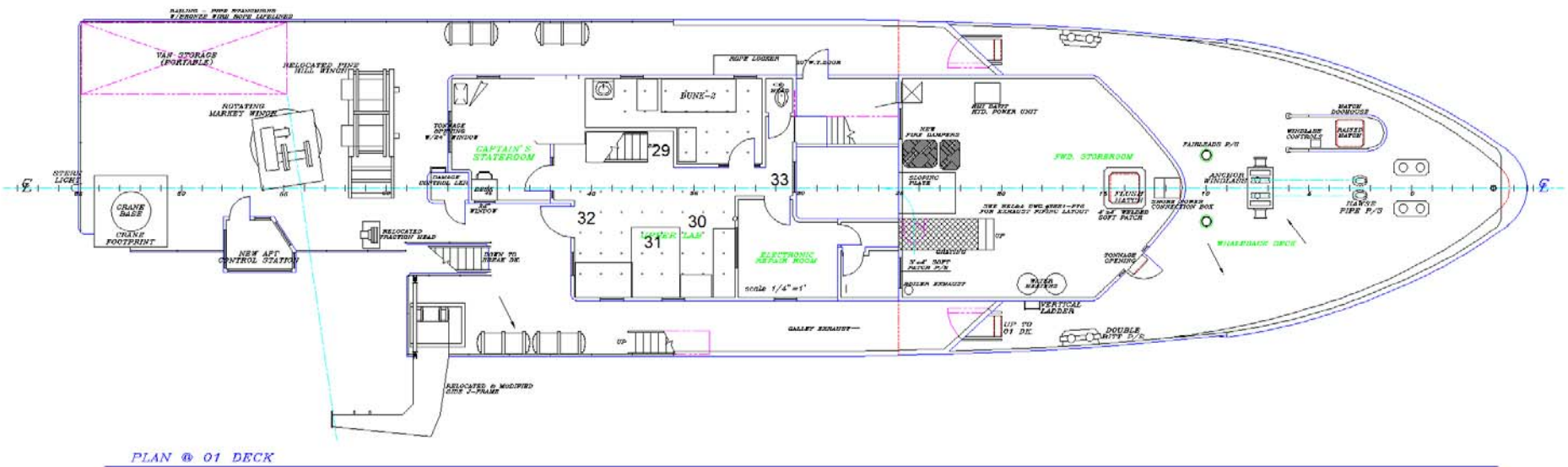
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Figure 3
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East Coast Van Pool Van #625.5.02

Figure 4
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